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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,955

01/23/2006

Masato Kurihara

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EXAMINER

LI, JUN

ART UNIT

PAPER NUMBER

1793

NOTIFICATION DATE

DELIVERY MODE

02/03/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com

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<b>Office Action Summary</b>	<b>Application No.</b> 10/561,955	<b>Applicant(s)</b> KURIHARA ET AL.	
	<b>Examiner</b> JUN LI	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11/16/2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 9-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Election of Restriction***

Applicant's election with traverse of group I invention (claim 1-8) in the reply filed on 11/16/2009 is acknowledged. The traversal is on the ground(s) that there is no serious search burden. This is not found /persuasive because this is a 371 national stage case and lack of unity of invention has been clearly established in previous office action while search burden criteria is applied to US cases. Furthermore, there is no evidence to support applicant's allegation about no serious search burden.

The requirement is still deemed proper and is therefore made **FINAL**.

Claims 9-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected group II invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 11/16/2009.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

- 1. Claim 1-4 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara (JP2000-223121) in view of Sugano (JP2002-083595).**

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Kurihara teaches a carbon material for an electrode having a specific surface area of 0.1-900 m<sup>2</sup>/g formed by thermal plasma-treating raw material powder (abstract, claim 1, 6, ([0001], [0031]).

Regarding claim 1 and 2, Kurihara fails to expressly teaching adding a sulfur compound into the carbon material by using a gas atmosphere including a sulfur-containing compound.

Sugano teaches adding sulfur for manufacturing carbon material for nonaqueous solvent secondary battery electrodes because sulfur addition can increase the degree of graphitization, high service capacity and high charge and discharge efficiency ([0012]) wherein 5% weight of sulfur was used ([0017]).

It would have been obvious to one ordinary skill in the art to adopt the addition of sulfur as taught by Sugano to improve the carbon material for electrode of Kurihara. One of ordinary skill in the art would have been motivated to provide a sulfur-containing compound to the gas atmosphere during plasma-treating because sulfur addition can increase the carbon material graphitization degree, high service capacity and high charge and discharge of the carbon material for electrode as taught by Sugano([0012]). Furthermore, adopting known technique to improve efficiency of similar method is well within the scope of one ordinary skill in the art.

It is to be noted that the recited surface area in the instant application is overlapping with the prior art, thus a prima facie case of obviousness exists (See § MPEP 2144.05 [R-5] I).

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Regarding claim 3 and 4, Kurihara further teaches carbon material such as graphite, acetylene black and Ketchen black etc can be used together with metallic sulfide to make carbon materials for positive electrode materials (anode) ([0057], [0043]) while an electrode comprising paint for negative electrode (cathode) including an improved coal raw material, which indicates carbon material can be both used as an anode and cathode

As for the recited sulfur mass ratio range in the instant claims, it is to be noted that discovering an optimum value of a result-effective variable requires only routine skill in the art (See MPEP §2144.05 [R-5] II). In the instant case, the amount of sulfur added into the carbon material is a result effective variable because Sugano already teaches addition of sulfur (such as 5% weight as discussed above) will affect the carbon material and its related electrode properties. Therefore, it would have been obvious to one of ordinary skill in the art to have optimized the amount of sulfur for a desired carbon material and a desired electrode from such carbon material.

Regarding claim 6, Kurihara further teaches an electrode comprising a paint for negative electrode including a improved coal raw material and a binder ([0052]) which are then painted on a charge collector which made from aluminum, copper, nickel, titanium etc ([0053], [0054]).

Regarding claim 7 and 8, Kurihara further teaches the lithium secondary battery can include an anode, a negative electrode (cathode)([0055], [0061]) while different nonaqueous solvent for electrolysis solution ([0059]) while the structure of the lithium secondary battery is not limited([0061]). As for the recited electrolyte layer arranged

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between the anode and cathode is an obvious arrangement for one ordinary skill in the art.

**2. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara (JP2000-223121) in view of Sugano (JP2002-083595) as applied to claim 1-4 and 6-8 above, and further in view of Takami (US5340670).**

The references of Kurihara in view of Sugano fail to expressly teach the carbon material capable of inserting and desorbing lithium ion.

Takami teaches a carbon material for lithium secondary battery is capable of absorbing and desorbing lithium ion to suppress the reaction between lithium and the nonaqueous electrolyte thus prevent precipitation of lithium dendrites (column 1 lines 61- column 2 line 2).

It would have been obvious to one ordinary skill in the art to adopt the lithium ion absorbing and desorbing capability of carbon material as taught by Takami to improve the carbon material for electrode of Kurihara in view of Sugano. One of ordinary skill in the art would have appreciated to do so because lithium ion absorbing and desorbing capability can suppress the reaction between lithium and the nonaqueous electrolyte thus prevent precipitation of lithium dendrites as taught by Takami (column 1 lines 61- column 2 line 2). Furthermore, adopting known technique to improve efficiency of similar method is well within the scope of one ordinary skill in the art.

***Response to Arguments***

Applicant's arguments filed on 11/16/2009 have been fully considered but they are not persuasive. In response to neither Kurihara nor Sugano discloses a thermal plasma treatment, it is noted Kurihara clearly teaches carbon material formed by thermal-plasma treating (abstract, claim 6). Kurihara is silent about using sulfur for making an electrode carbon material, Sugano is applied to teach such deficiency because Sugano shows adding sulfur for manufacturing electrode carbon material to provide benefit of increasing the degree of graphitization, high service capacity, high charge and discharge efficiency ([0012], [0017]). One would have been motivated to combine these references and make the modification because they are drawn to same technical fields of making electrode carbon material, constituted with same ingredients of carbon material and share common utilities, i.e. electrode in a nonaqueous secondary battery, and pertinent to the problem which applicant concerns about, i.e. using sulfur to improve service capacity, high charge and discharge efficiency as noted in the instant specification (page 5 lines 12-15). In response to applicant's arguments about Sugano merely teaches mixing in a pitch and not specifying a specific sulfur, it is noted instant claims only claim "a sulfur containing compound" so as long as sulfur is there, which meets the claimed limitation. The claimed subject matter is directed to a carbon material with sulfur, the applied references teach such limitations as set forth in the rejections. As for the claimed process steps, only if the process will impart a distinct structural characteristics to the claimed carbon material, however, Kurihara already teaches a thermal plasma processing method and Sugano teaches adding sulfur for

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making an improved electrode carbon material, thus a substantially similar thermal plasma processing atmosphere with presence of sulfur is expected, thus substantially similar carbon material structure with presence of sulfur is expected. Furthermore, there is no data/evidence to demonstrate that the claimed carbon material will have a distinct structure as compared to applied references. Thus the claimed subject matter is just an obvious modification over the applied references.

### ***Conclusion***

No claims are allowed.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUN LI whose telephone number is (571)270-5858. The examiner can normally be reached on Monday-Friday, 8:00am-5:00 pm EST.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Mayes can be reached on 571-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JUN LI/  
Examiner, Art Unit 1793  
01/27/2010

/Melvin Curtis Mayes/  
Supervisory Patent Examiner, Art Unit 1793